

SEQUENCE LISTING

<110> Reed, John C.

<120> Plant Cytoprotective Genes and Methods
of Using Same

<130> P-LJ 4868

<150> US 09/661,014

<151> 2000-09-13

<160> 7

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 617

<212> DNA

<213> Lycopersicon esculentum

<220>

<221> CDS

<222> (103)...(594)

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cggtgcgtgg ctcttggtga ataccaagcg agaggagata ag atg ccg gaa cat 114
Met Pro Glu His
1

cct gct gca gac tca tca gcc acc gac aac acc gtc acc gtc aag cgt 162
Pro Ala Ala Asp Ser Ser Ala Thr Asp Asn Thr Val Thr Val Lys Arg
5 10 15 20

tat gcc cct ccc aat cag cgg aat cgt tca ctg gcc agg cga aaa tct 210
Tyr Ala Pro Pro Asn Gln Arg Asn Arg Ser Leu Gly Arg Arg Lys Ser
25 30 35

gga gat cga ctt gaa aga gct agc agc tat gct agt gat gga gag aag 258
Gly Asp Arg Leu Glu Arg Ala Ser Ser Tyr Ala Ser Asp Gly Glu Lys
40 45 50

aac caa atg aga gca gct aag tct gta tct gat gct gga gtc aat cga 306
Asn Gln Met Arg Ala Ala Lys Ser Val Ser Asp Ala Gly Val Asn Arg
55 60 65

gta aat gat tat cct cca aca aag tta ata ccg cta caa gga tgt tgt 354
Val Asn Asp Tyr Pro Pro Thr Lys Leu Ile Pro Leu Gln Gly Cys Cys
70 75 80

aca agc gaa gct ttt cag cta cta aat gac cgc tgg gca gct gct ctg 402

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Thr Ser Glu Ala Phe Gln Leu Leu Asn Asp Arg Trp Ala Ala Ala Leu
 85                      90                      95                      100

aat gct cat aat aat tta tca gaa gat tct cgt gaa agg cct gta atg 450
Asn Ala His Asn Asn Leu Ser Glu Asp Ser Arg Glu Arg Pro Val Met
                      105                      110                      115

tac aca aaa aga tca cct tgg ggg cat cct ttt ctt cca cat caa ttg 498
Tyr Thr Lys Arg Ser Pro Trp Gly His Pro Phe Leu Pro His Gln Leu
                      120                      125                      130

atg tca caa gca gga gct gaa tct tct act ggc cag aag gat ttt cta 546
Met Ser Gln Ala Gly Ala Glu Ser Ser Thr Gly Gln Lys Asp Phe Leu
                      135                      140                      145

agc aaa ctt cag atg gct atg ctc aat aca cat gtc aat ttc gat gcc 594
Ser Lys Leu Gln Met Ala Met Leu Asn Thr His Val Asn Phe Asp Ala
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taa atg ctat cc at ca agtg gtc 617

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<210> 2

<211> 164

<212> PRT

<213> Lycopersicon esculentum

<400> 2

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Met Pro Glu His Pro Ala Ala Asp Ser Ser Ala Thr Asp Asn Thr Val
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Thr Val Lys Arg Tyr Ala Pro Pro Asn Gln Arg Asn Arg Ser Leu Gly
                      20                      25                      30
Arg Arg Lys Ser Gly Asp Arg Leu Glu Arg Ala Ser Ser Tyr Ala Ser
                      35                      40                      45
Asp Gly Glu Lys Asn Gln Met Arg Ala Ala Lys Ser Val Ser Asp Ala
                      50                      55                      60
Gly Val Asn Arg Val Asn Asp Tyr Pro Pro Thr Lys Leu Ile Pro Leu
65                      70                      75                      80
Gln Gly Cys Cys Thr Ser Glu Ala Phe Gln Leu Leu Asn Asp Arg Trp
                      85                      90                      95
Ala Ala Ala Leu Asn Ala His Asn Asn Leu Ser Glu Asp Ser Arg Glu
                      100                      105                      110
Arg Pro Val Met Tyr Thr Lys Arg Ser Pro Trp Gly His Pro Phe Leu
                      115                      120                      125
Pro His Gln Leu Met Ser Gln Ala Gly Ala Glu Ser Ser Thr Gly Gln
                      130                      135                      140
Lys Asp Phe Leu Ser Lys Leu Gln Met Ala Met Leu Asn Thr His Val
145                      150                      155                      160
Asn Phe Asp Ala

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<210> 3

<211> 1034

<212> DNA

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<222> (87)...(830)

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actcgaagaa gaagaagaag agaaca atg gaa ggt ttc aca tcg ttc ttc gac 113
                               Met Glu Gly Phe Thr Ser Phe Phe Asp
                               1           5

tcg caa tct gcc tct cgc aac cgc tgg agt tat gat tct ctc aaa aac 161
Ser Gln Ser Ala Ser Arg Asn Arg Trp Ser Tyr Asp Ser Leu Lys Asn
 10           15           20           25

ttc cgc cag atc tca cct ctc gtt caa act cat ctc aag cag gtg tac 209
Phe Arg Gln Ile Ser Pro Leu Val Gln Thr His Leu Lys Gln Val Tyr
           30           35           40

ctt acg cta tgc tgt gct tta gtg gca tcg gct gct ggg gct tac ctt 257
Leu Thr Leu Cys Cys Ala Leu Val Ala Ser Ala Ala Gly Ala Tyr Leu
           45           50           55

cac att cta tgg aat atc ggt ggc ctc ctc aca aca atg gct tgc atg 305
His Ile Leu Trp Asn Ile Gly Gly Leu Leu Thr Thr Met Ala Cys Met
           60           65           70

gga agc atg gtg tgg ctt ctc tca gct cct cct tat caa gag caa aaa 353
Gly Ser Met Val Trp Leu Leu Ser Ala Pro Pro Tyr Gln Glu Gln Lys
           75           80           85

agg gtg gct ctt ctg atg gca gct gca ctt ttt gaa ggc gcc tct att 401
Arg Val Ala Leu Leu Met Ala Ala Ala Leu Phe Glu Gly Ala Ser Ile
           90           95          100          105

ggt cct ctg att gag ctg ggc att aac ttc gat cca agc att gtg ttt 449
Gly Pro Leu Ile Glu Leu Gly Ile Asn Phe Asp Pro Ser Ile Val Phe
           110          115          120

ggc gct ttt gta ggt tgt gct gtg gtt ttt ggt tgc ttc tca gct gct 497
Gly Ala Phe Val Gly Cys Ala Val Val Phe Gly Cys Phe Ser Ala Ala
           125          130          135

gcc atg ttg gca agg cgc agg gag tac ttg tac ctc ggg ggc ctt ctt 545
Ala Met Leu Ala Arg Arg Arg Glu Tyr Leu Tyr Leu Gly Gly Leu Leu
           140          145          150
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tca tct ggc gtc tcc ctt ctc ttc tgg ttg cac ttt gca tcc tcc att 593
Ser Ser Gly Val Ser Leu Leu Phe Trp Leu His Phe Ala Ser Ser Ile
155 160 165

ttt ggt ggt tcc atg gct gtt ttc aag ttt gag ttg tat ttt gga ctc 641
Phe Gly Gly Ser Met Ala Val Phe Lys Phe Glu Leu Tyr Phe Gly Leu
170 175 180 185

ttg gtg ttt gtg ggc tac atc gtc ttt gac acc caa gaa att att gag 689
Leu Val Phe Val Gly Tyr Ile Val Phe Asp Thr Gln Glu Ile Ile Glu
190 195 200

aag gct cac ttg ggt gat atg gat tac gtt aag cat gca ttg acc ctt 737
Lys Ala His Leu Gly Asp Met Asp Tyr Val Lys His Ala Leu Thr Leu
205 210 215

ttc aca gat ttt ggc gct gtt ttt gtg cgg att ctg atc atc atg tta 785
Phe Thr Asp Phe Gly Ala Val Phe Val Arg Ile Leu Ile Ile Met Leu
220 225 230

aag aat gca tct gag aag gaa gag aag aag aag aag agg aga aac 830
Lys Asn Ala Ser Glu Lys Glu Glu Lys Lys Lys Lys Arg Arg Asn
235 240 245

tagatttgct tctcaacttg tggtttccan aactccttgt gttcacctga aacaagcatg 890
ttaatagttt gatacttgct tcaacttttagc ataggctgtg atgtaatgtc gtgtgacatg 950
ccattatggc tgtgtgattg agcatctagc ctttttatct tctaaagctt ttttcttaac 1010
attgataagg aaagttcctt gtga 1034

<210> 4

<211> 248

<212> PRT

<213> Lycopersicon esculentum

<400> 4

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Val Gln Thr His Leu Lys Gln Val Tyr Leu Thr Leu Cys Cys Ala Leu
35 40 45
Val Ala Ser Ala Ala Gly Ala Tyr Leu His Ile Leu Trp Asn Ile Gly
50 55 60
Gly Leu Leu Thr Thr Met Ala Cys Met Gly Ser Met Val Trp Leu Leu
65 70 75 80
Ser Ala Pro Pro Tyr Gln Glu Gln Lys Arg Val Ala Leu Leu Met Ala
85 90 95
Ala Ala Leu Phe Glu Gly Ala Ser Ile Gly Pro Leu Ile Glu Leu Gly
100 105 110
Ile Asn Phe Asp Pro Ser Ile Val Phe Gly Ala Phe Val Gly Cys Ala
115 120 125
Val Val Phe Gly Cys Phe Ser Ala Ala Ala Met Leu Ala Arg Arg Arg
130 135 140

Glu Tyr Leu Tyr Leu Gly Gly Leu Leu Ser Ser Gly Val Ser Leu Leu
 145 150 155 160
 Phe Trp Leu His Phe Ala Ser Ser Ile Phe Gly Gly Ser Met Ala Val
 165 170 175
 Phe Lys Phe Glu Leu Tyr Phe Gly Leu Leu Val Phe Val Gly Tyr Ile
 180 185 190
 Val Phe Asp Thr Gln Glu Ile Ile Glu Lys Ala His Leu Gly Asp Met
 195 200 205
 Asp Tyr Val Lys His Ala Leu Thr Leu Phe Thr Asp Phe Gly Ala Val
 210 215 220
 Phe Val Arg Ile Leu Ile Ile Met Leu Lys Asn Ala Ser Glu Lys Glu
 225 230 235 240
 Glu Lys Lys Lys Lys Arg Arg Asn
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<220>
 <223> primer

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<210> 7
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 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 7
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